

REMARKS

Claims 1-57 are currently pending. No claims have been amended. New arguments are presented. Applicants assert all claims pending are in condition for allowance.

Rejection of the Claims Under 35 U.S.C. §103(a)

Reconsideration is requested of the rejection of claims 1-57 under 35 U.S.C. §103(a) as being unpatentable over Hale, et al. (U.S. Patent App. Publ. No. 2003/0039851) in view of Chung, et al. (EP 1 106 640), and further in view of Strand, et al. (U.S. Patent App. Publ. No. 2004/0127609).

Claim 1 is directed to an absorbent article comprising a laminated outer cover, the laminated outer cover comprising a biodegradable stretched aliphatic-aromatic copolyester film. The film comprises filler particles and a copolyester comprising from about 10 mole% to about 30 mole% of aromatic dicarboxylic acid or ester thereof, from about 20 mole% to about 40 mole% of aliphatic dicarboxylic acid or ester thereof, from about 30 mole% to about 60 mole% dihydric alcohol, and wherein the weight average molecular weight of the copolyester is from about 90,000 to about 160,000 Daltons, and wherein the number average molecular weight of the copolyester is from about 35,000 to about 70,000 Daltons, and wherein the glass transition temperature of the copolyester is less than about 0°C.

Hale, et al. is directed to multilayer films comprising a layer of a thermoplastic polymer such as an aliphatic-aromatic copolyester (AAPE). The AAPES may be comprised of diols and diacids. In one preferred embodiment, the AAPE comprises about

30 to about 75 mole % of adipic acid, about 25 to about 70 mole % terephthalic acid, about 90 to 100 mole % 1,4-butanediol, and 0 to about 10 mole % of modifying diol, based on 100 mole percent of a diacid component and 100 mole percent of a diol component. The AAPE may optionally comprise from about 0.01 to about 10 wt.% of a branching agent, and from 0 to about 80 percent by weight of a filler. The multilayer film in stretched form has a moisture vapor transmission rate of at least 300 g- $\mu\text{m}/\text{m}^2\text{-hour}$ (or g-mil/ $\text{m}^2\text{-day}$), and preferably greater than about 500 to about 10,000 g- $\mu\text{m}/\text{m}^2\text{-hour}$. The AAPE may be formulated into multilayer films and incorporated into articles such as diapers.

Significantly, Hale, et al. do not disclose a copolyester having applicants' claimed amounts of aromatic dicarboxylic acid, aliphatic dicarboxylic acid, and dihydric alcohol, and that has a weight average molecular weight of from about 90,000 to about 160,000 Daltons, a number average molecular weight of from about 35,000 to about 70,000 Daltons, and a glass transition temperature of less than about 0°C.¹

Chung, et al. is directed to a copolyester resin composition comprising 0.1 wt% to 30 wt% of an aromatic-aliphatic prepolymer having a number average molecular weight of from 300 to 30,000, 40 wt% to 71 wt% of one or more aliphatic or alicyclic dicarboxylic acids or anhydrides, and 29 wt% to 60 wt%

¹ In the final Office action, the Examiner has stated that she is unsure why applicants argue that Hale, et al. do not teach the claimed amounts of aliphatic dicarboxylic acids, aromatic dicarboxylic acids, and dihydric alcohol. To clarify, applicants have stated that Hale, et al. do not teach a copolyester having applicants' claimed amounts of aromatic dicarboxylic acid, aliphatic dicarboxylic acid, and dihydric alcohol and that also has the claimed number average molecular weight, weight average molecular weight, and glass transition temperature.

of one or more aliphatic or alicyclic glycols. The copolyester resin has a number average molecular weight of from 30,000 to 70,000, a weight average molecular weight of from 100,000 to 600,000, a melting point of from 55°C to 120°C, and melt index (at 190°C, 2,160g) of from 0.1 to 30 g/10 min. The copolyester product is biodegradable and may be used for packaging film and rubbish bags. Chung, et al. fail to disclose the glass transition temperatures of their copolyester resins.

Strand, et al. is directed to a flame retardant polyester composition suitable for calendering. The composition comprises a polyester having a crystallization half time from a molten state of at least 5 minutes wherein the polyester is a random copolymer, a plasticizer, a phosphorus-containing flame retardant miscible with the polyester plasticized with the plasticizer, and an additive effective to prevent sticking of the polyester to calendering rolls. The polyester may comprise at least 80 mole percent of diacid residues comprising one or more of terephthalic acid, naphthalenedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, or isophthalic acid; and diol residues comprising about 10 to about 100 mole% 1,4-cyclohexanedimethanol and 1 to about 90 mole % of one or more diols containing 2 to about 20 carbon atoms, wherein the diacid residues are based on 100 mole % and the diol residues are based on 100 mole %. The polyester may further comprise from 0 to about 20 mole percent of one or more modifying diacids, including aliphatic dicarboxylic acids and aromatic dicarboxylic acids. The polyester composition has a glass transition temperature ranging from about -45°C to about 40°C.

As stated in MPEP §2143, in order for the Office to show a prima facie case of obviousness, the Office must meet three criteria: (1) the prior art reference(s) must teach or suggest all of the claim limitations; (2) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings; and (3) there must be some reasonable expectation of success. In the instant case, there is no suggestion or motivation to modify or combine the cited references to arrive at claim 1.

As noted above, the Hale, et al. reference fails to disclose the glass transition temperature of the AAPES disclosed therein. Nor does Chung, et al. disclose copolyesters having a glass transition temperature of less than about 0°C, as required by applicants' claim 1. Recognizing this deficiency, the Office has cited Strand, et al. for combination with Hale, et al. and Chung, et al. More particularly, the Office has stated that Strand, et al. teach a film substantially identical to the film of Hale, et al. and Chung, et al., and therefore the glass transition temperature range taught by Strand, et al. would be an inherent property of the film of Hale, et al. Applicants respectfully disagree.

A finding of inherency cannot be based on *mere assumptions* by the Office. Rather, to establish inherency, "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the

applied prior art.”² Furthermore, “[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.”³

Initially, applicants respectfully submit that the Office appears to be mischaracterizing the Strand, et al. reference. In particular, the Office has stated that Strand, et al. teach a flame retardant copolyester comprising 0-20 mol% diacid, the diacid being a mixture of an aromatic dicarboxylic acid and adipic acid, and 10-100 mol% 1,4-butanediol.⁴ Applicants respectfully disagree with this characterization of Strand, et al.

As noted above, Strand, et al. state that the polyesters disclosed therein comprise at least 80 mole% of diacid residues comprising one or more of terephthalic acid, naphthalenedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, or isophthalic acid,⁵ and diol residues comprising about 10 to about 100 mole% 1,4-cyclohexanedimethanol and 0 to about 90 mole% of one or more diols containing 2 to about 20 carbon atoms. Paragraph 27 of Strand, et al. states that the polyester “may also further comprise from 0 to about 20 mole percent of

² MPEP §2112 (citing *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)).

³ MPEP §2112 (citing *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993)). MPEP §2112 also states “[i]nherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” (quoting *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

⁴ See p. 6 of the final Office action.

⁵ See Strand, et al. at p. 3, ¶26. Applicants note that terephthalic acid, naphthalenedicarboxylic acid, and isophthalic acid are aromatic dicarboxylic acids, while 1,4-cyclohexanedicarboxylic acid is an alicyclic dicarboxylic acid.

one or more modifying diacids containing about 4 to about 40 carbon atoms" (emphasis added) that may be aliphatic dicarboxylic acids, alicyclic dicarboxylic acids, or aromatic dicarboxylic acids. It is clear, however, that this "0 to about 20 mole percent" of modifying diacids is in addition to the at least 80 mole% diacid residues, set forth in ¶26.⁶

Thus, based on the disclosure in paragraphs 26 and 27 of Strand, et al., it appears the polyesters described therein would comprise at least 80 mole percent of diacid residues (selected from the group of diacids listed in ¶26), and further comprise up to 20 mole% of modifying diacids (as set forth in ¶27), for a total of 100 mole% of diacid residues (based on 100 mole% of diacid residues). This is a significantly higher percentage of diacid than the 0-20 mole%, asserted by the Office.

Further support for applicants' interpretation of Strand, et al. can be found in ¶23, which states that the polyesters of Strand, et al. contain substantially equal molar proportions of acid residues (100 mole%) and diol residues (100 mole%), which react in substantially equal proportions such that the total moles of repeating units is equal to 100 mole%. Thus, the total mole% of diacid residues in the polyesters of Strand, et al. (based on the combined diacid and diol components) would be 50 mole% and the total mole% of diol residues (based on the combined diacid and diol components) would be 50 mole%. Consequently, the amount of dicarboxylic acid (whether aliphatic

⁶ The mole% of diacid residues given in Strand, et al. are based on 100 mole%, and the mole% of diol residues are also based on 100 mole%. See Strand, et al. at ¶23 and 26.

or aromatic) in the polyesters of Strand, et al. would necessarily be 50 mole% based on the combined diacid and diol components. Again, this is significantly higher than the 0-20 mole% diacid components asserted by the Office.

Applicants note that Strand, et al. have not explicitly stated what proportion of the diacid components of their polyesters are aromatic dicarboxylic acids and what proportion are aliphatic dicarboxylic acids. It cannot be assumed, however, that the proportions of aliphatic and aromatic dicarboxylic acids would inherently (i.e., necessarily) be the same as set forth in applicants' claims or as are present in the copolyesters of Hale, et al. For instance, it is just as likely that the proportions of aliphatic and aromatic dicarboxylic acids in the polyesters of Strand, et al. fall outside the ranges set forth in applicants' claims and outside the amounts set forth for the AAEPs of Hale, et al. In fact, it is possible that the polyesters of Strand, et al. may comprise only aliphatic dicarboxylic acids and no aromatic dicarboxylic acids or only aromatic dicarboxylic acid and no aliphatic dicarboxylic acid.⁷ This is the case for the polyester set forth in the Examples of Strand, et al., which comprised 80 to 100 wt% terephthalic acid (an aromatic dicarboxylic acid), 30 to 80 wt%

⁷ As discussed above, Strand, et al. state that the polyester may comprise at least 80 mole percent of diacid residues comprising one or more of terephthalic acid (an aromatic dicarboxylic acid), naphthalenedicarboxylic acid (an aromatic dicarboxylic acid), 1,4-cyclohexanedicarboxylic acid (an aliphatic dicarboxylic acid), or isophthalic acid (an aromatic dicarboxylic acid) (see ¶26), and may further comprise from 0 to about 20 mole percent of one or more modifying diacids that may be aliphatic dicarboxylic acids, alicyclic dicarboxylic acids, or aromatic dicarboxylic acids (see ¶27). Thus, in certain embodiments, it is possible that the polyester comprises only aromatic dicarboxylic acids or only aliphatic dicarboxylic acids.

ethylene glycol (an alcohol), and 20 to 70 wt% 1,4-cyclohexanedimethanol (an alcohol), but no aliphatic dicarboxylic acid.⁸ A polyester formed from these components would clearly be outside the scope of the claims of the present invention and furthermore, could not be said to be substantially identical to the AAEPs of Hale, et al., which all comprise some proportion of aliphatic dicarboxylic acid. The polyesters of Strand, et al. can thus not be said to inherently have the same mole% breakdown of components or to be substantially identical to the films set forth in applicants' claims⁹ or as the AAEPs of Hale, et al.

As further evidence of this, applicants again refer to ¶26-27 of Strand, et al. As noted above, ¶26 of Strand, et al. states that the polyester of Strand, et al. may comprise at least about 80 mole % of diacid residues that comprise one or more of terephthalic acid, naphthalenedicarboxylic acid, isophthalic acid, or 1,4-cyclohexanedicarboxylic acid. The only one of these diacids that is an aliphatic dicarboxylic acid is 1,4-cyclohexanedicarboxylic acid.

Additionally, ¶27 of Strand, et al. states that the polyester may further comprise from 0 to about 20 mole percent (based on 100 mol% diacid components) of one or more modifying diacids, which may include adipic acid, glutaric acid, succinic

⁸ See Strand, et al. at ¶71.

⁹ The final Office action states that Strand, et al. teach copolyester films that comprise an aliphatic dicarboxylic acid, an aromatic dicarboxylic acid, and a dihydric alcohol in amounts that falls within the ranges set forth in applicants' claims, and therefore the glass transition temperatures set forth in Strand, et al. are inherent properties of the claimed film. For the reasons set forth above, applicants submit that the films of Strand, et al. do not inherently have the same mole% breakdown of components as set forth in applicants' claims.

acid, etc. Although the AAEPs of Hale, et al. may comprise diacids such as adipic, glutaric, and succinic acid, the amounts of these diacids in the AAEPs of Hale, et al. are all greater than 20 mol% (based on 100 mol% diacid component). Thus, the polyesters of Strand, et al. and the copolyesters of Hale, et al. do not have similar aliphatic dicarboxylic acid components.

Consequently, the polyesters of Strand, et al. cannot be said to be substantially identical to the copolyesters of Hale, et al. Since glass transition temperatures are highly dependent on the exact composition of the polyesters, the copolyesters of Hale, et al. cannot be said to inherently (i.e., necessarily) have the same glass transition temperatures as the polyesters described in Strand, et al.

Based on the above discussion, there would be no motivation for one skilled in the art to combine the teachings of Hale, et al. and Strand, et al. to arrive at a copolyester having applicants' claimed mole% breakdown of components and glass transition temperature. There is simply no suggestion in either of the references to make such a combination, and no recognition of the benefits of copolyesters having the claimed combination of mole% breakdown of components and glass transition temperature.

Additionally, as noted above, the Hale, et al. reference fails to disclose the number average molecular weight or weight average molecular weight of the AAEPs disclosed therein. Recognizing this deficiency, the Office has cited Chung, et al. for combination with Hale, et al. and Strand, et al. More particularly, the Office has stated that Chung, et al. teach a substantially identical copolyester film as disclosed in Hale,

et al., and therefore the number average and weight average molecular weights disclosed in Chung, et al. would be inherent properties of the film of Hale, et al. Applicants respectfully disagree.

In the instant case, the Office is assuming that the AAPES of Hale, et al. will have the same weight average and number average molecular weights as the films of Chung, et al., simply because the films of Hale, et al. and Chung, et al. may comprise similar components. However, this assumption is incorrect, as a close reading of the Chung, et al. and Hale, et al. references indicates.

Initially, applicants note that the Office has stated that Chung, et al. teach a substantially identical copolyester film comprising 0.00019-6 mol% aromatic dicarboxylic acid, 8-100 mol% aliphatic dicarboxylic acid, and 10-100 mol% dihydric alcohol, with the mol% being calculated based upon the number average molecular weight. While applicants acknowledge the Office's mole% breakdown calculations for the components of the copolyester resins of Chung, et al., applicants respectfully submit that these calculations are inaccurate for the reasons set forth below.

In any event, the precise mole% breakdown of components for the copolyester resins of Chung, et al. is irrelevant since, as discussed above and admitted by the Office, Chung, et al. fail to teach or suggest copolyesters having a glass transition temperature of less than about 0°C, as required by applicants' claim 1. Thus, like the combination of Hale, et al. and Strand, et al., discussed above, there is no motivation in the cited references to modify or combine Hale, et al., Chung, et al., and

Strand, et al. to arrive at the absorbent article set forth in applicants' claim 1. In particular, neither Hale, et al., Chung, et al., nor Strand, et al. disclose or suggest the desirability of a copolyester film comprising aromatic dicarboxylic acid, aliphatic dicarboxylic acid, and dihydric alcohol in applicants' claimed mole% that also has a weight average molecular weight of from about 90,000 to about 160,000 Daltons and a number average molecular weight of from about 35,000 to about 70,000 Daltons, and a glass transition temperature of less than about 0°C.

Additionally, applicants submit that contrary to the Office's assertion, Chung, et al. do not disclose films substantially identical to those set forth in Hale, et al., Strand, et al., or in applicants' claims. In particular, Chung, et al. do not disclose specific mole % for the components of their copolyester resins. In fact, the only mention in Chung, et al. of molar quantities of components is given in ¶23 of Chung, et al., which is describing preparation of the aromatic-aliphatic prepolymers, which are but one component of the copolyester resin of Chung, et al. To produce the aromatic-aliphatic prepolymers, one or more aromatic dicarboxylic acids, one or more aliphatic dicarboxylic acids, and one or more aliphatic glycols are reacted. In ¶23, Chung, et al. state that in the first reaction step (i.e., preparation of the prepolymers), for 1.0 mole of total dicarboxylic acid (i.e., sum of aromatic and aliphatic dicarboxylic acids), the mole ratio of aliphatic or alicyclic glycols is preferably from 1.1 mole to 1.5 mole, and that for dicarboxylic acid ingredients, the mole ratio of aromatic component to aliphatic component is preferably

in the range from 0.2:0.8 to 0.8:0.2. The actual mole% of aromatic dicarboxylic acids, aliphatic dicarboxylic acids, and glycols in the final copolyester is not explicitly given by Chung, et al.

Although Chung, et al. do not explicitly set forth the mole% of the components of their copolyester resin, the mole% of individual components for some of the resins may be calculated from the Examples of Chung, et al. For instance, in Example 1 of Chung, et al., a copolyester is formed. Chung, et al. begin by forming an aromatic-aliphatic prepolymer, having a number average molecular weight of approximately 500, using 19.2 grams of dimethyl terephthalate (an aromatic dicarboxylic acid), 27 grams of 1,4-butanediol (a dihydric alcohol), and 11.8 grams succinic acid (an aliphatic dicarboxylic acid). 39.4 grams of the aromatic-aliphatic prepolymer is obtained. The copolyester is then formed by adding 118 grams of succinic acid, 135 grams of 1,4-butane diol, and a tetrabutyl titanate catalyst to the aromatic-aliphatic prepolymer under the appropriate reaction conditions. The resulting product has a number average molecular weight of 47,000 and a weight average molecular weight of 380,000 (see ¶34).

The mole% of aliphatic dicarboxylic acid, aromatic dicarboxylic acid, and dihydric alcohol in the final product may be calculated using the molar mass of dimethyl terephthalate, 1,4-butanediol, and succinic acid, and the total amount of each of these compounds used to create the copolyester. For instance, a total of 19.2 grams of dimethyl terephthalate was used to form the copolyester of Example 1. Since dimethyl terephthalate has a molar mass of about 194.2 grams/mole, the

number of moles of dimethyl terephthalate used to form the copolyester in Example 1 was about 0.0989 moles.¹⁰ Similar calculations may be used to determine the number of moles of 1,4-butanediol (about 1.7980 moles)¹¹ and succinic acid (about 1.0991 moles)¹² used to form the copolyester.

The mole % of dimethyl terephthalate, 1,4-butanediol, and succinic acid in the copolyester resin may then be determined by dividing the amount of moles of each compound by the total number of moles in the copolyester (i.e., 2.996 moles).¹³ Using this calculation, the copolyester of Example 1 of Chung, et al. has 3.3 mole% dimethyl terephthalate¹⁴ (an aromatic dicarboxylic acid), 36.7 mole % succinic acid¹⁵ (an aliphatic dicarboxylic acid), and 60.0 mole% 1,4-butanediol¹⁶ (a dihydric alcohol), and a number average molecular weight of 47,000 and a weight average molecular weight of 380,000.

¹⁰ This equals the total amount of dimethyl terephthalate (i.e., 19.2 grams) times the molar mass of dimethyl terephthalate (i.e., 194.2 grams/mole).

¹¹ The total amount of 1,4-butanediol used to form the copolyester is 162 g (i.e., 27 grams used to form the prepolymer and an additional 135 g added thereto). The number of moles of 1,4-butanediol can be calculated by taking the total amount of 1,4-butanediol (i.e., 162 grams) times the molar mass of 1,4-butanediol (i.e., 90.1 grams/mole), which equals about 1.7980 moles of 1,4-butanediol.

¹² The total amount of succinic acid used to form the copolyester is 129.8 grams (i.e., 11.8 grams used to form the prepolymer and an additional 118 grams added thereto). The number of moles of succinic acid can be calculated by taking the total amount of succinic acid (i.e., 129.8 grams) times the molar mass of succinic acid (i.e., 118.1 grams/mole), which equals about 1.0991 moles succinic acid.

¹³ This number is calculated by adding the number of moles of dimethyl terephthalate (i.e., 0.0989 moles), 1,4-butanediol (i.e., 1.7980 moles), and succinic acid (i.e., 1.0991 moles).

¹⁴ $0.0989 \text{ moles dimethyl terephthalate} / 2.996 \text{ total moles} = 3.3 \text{ mole\% dimethyl terephthalate.}$

¹⁵ $1.0991 \text{ moles succinic acid} / 2.996 \text{ total moles} = 36.7 \text{ mole\% succinic acid.}$

¹⁶ $1.7980 \text{ moles 1,4-butanediol} / 2.996 \text{ total moles} = 60.0 \text{ mole\% 1,4-butanediol.}$

As can be seen from these calculations, the copolyester made in Example 1 of Chung, et al. does not have a mole% of aliphatic dicarboxylic acids, aromatic dicarboxylic acids, and dihydric alcohols that fall within the ranges of mole% given for the AAPES of Hale, et al. More particularly, none of the AAPES of Hale, et al. have a mole% of dihydric alcohol in an AAPES comprising diols and diacids of more than 50 mole%. For instance, paragraphs 47-52 and the Examples of Hale, et al. describe several examples of AAPES prepared from diols and diacids. However, none of these AAPES have a mole% of diol greater than 50 mole%.¹⁷

As such, the copolyesters of Chung, et al. cannot be said to be substantially identical to the films of Hale, et al. Consequently, it cannot be said that the copolyesters of Hale, et al. inherently have the same number average molecular weight and weight average molecular weight as the copolyesters of Chung, et al. as the copolyesters described in these two references may have a different component breakdown by mole%.

¹⁷ It is noted that ¶47 of Hale, et al. state that the mole% given for diol components is based on 100 mole% of a diol component, and the mole % for diacid components is based on 100 mole% of a diacid component. The AAPES thus have an equal amount of diol and diacid components. As such, the maximum mole% of total diol based on the combined diol and diacid components is 50 mole%.

Additionally, the only AAPES in Hale, et al. comprising an aromatic dicarboxylic acid having a mole% as low as 3.3 mole% is described in ¶49 of Hale, et al., and comprises about 30 to about 95 mole% succinic acid, about 5 to about 70 mole% terephthalic acid, about 90 to 100 mole % 1,4-butanediol, and 0 to about 10 mole% modifying diol, based on 100 mole percent of a diacid component and 100 mole percent of a diol component. However, while the mole% of terephthalic acid in this copolyester based on the combined diol and diacid components would be about 2.5 to about 35 mole%, the mole% of 1,4-butanediol based on the combined diol and diacid components would be about 45 to 50 mole%, which is less than the mole % of 1,4-butanediol in the copolyester produced in Example 1 of Chung, et al.

Furthermore, even if the copolyesters of Chung, et al. and Hale, et al. did comprise the same breakdown of components by mole% (which as discussed above, they do not), the copolyesters would not necessarily have the same number average molecular weight and weight average molecular weight. More particularly, the number average molecular weight of a copolyester is not always correlated with a particular mole% breakdown of the components of the copolyester. For instance, the copolyester formed in Example 1 of Chung, et al. has a number average molecular weight of 47,000, which falls within the claimed range for number average molecular weight in applicants' claim 1 (i.e., about 35,000 to about 70,000 Daltons). However, the mole% breakdown for the components of the copolyester in Example 1 of Chung, et al. is 3.3 mole% dimethyl terephthalate (an aromatic dicarboxylic acid), 36.7 mole% succinic acid (an aliphatic dicarboxylic acid), and 60.0 mole% 1,4-butanediol (a dihydric alcohol). In contrast, the copolyester in applicants' claim 1 comprises from about 10 mole% to about 30 mole% of aromatic dicarboxylic acid, from about 20 mole% to about 40 mole% of aliphatic dicarboxylic acid, and from about 30 mole% to about 60 mole% dihydric alcohol. As can be seen from this comparison, while the copolyester from Example 1 of Chung, et al. has a number average molecular weight that falls within the claimed range of applicants' claim 1, the mole% of aromatic dicarboxylic acid (i.e., 3.3 mole%) does not fall within the range of aromatic dicarboxylic acid set forth in applicants' claim 1 (i.e., from about 10 mole% to about 30 mole%).

As can be seen from this comparison, copolyesters having the same number average molecular weight will not always have

the same mole% breakdown of components. The reverse of this is also true; i.e., copolyesters having the same mole% breakdown of components will not always have the same number average molecular weight. Consequently, the copolyesters of Hale, et al. cannot be said to inherently have the same number average molecular weight as set forth in applicants' claim 1.

In light of the foregoing discussion, applicants submit that one skilled in the art would not be motivated to modify or combine the Hale, et al., Strand, et al., and Chung, et al. references to arrive at the absorbent article set forth in applicants' claim 1. In particular, neither Hale, et al., Strand, et al., nor Chung, et al. disclose or suggest the desirability of a copolyester film comprising aromatic dicarboxylic acid, aliphatic dicarboxylic acid, and dihydric alcohol in applicants' claimed mole% that also has a weight average molecular weight of from about 90,000 to about 160,000 Daltons and a number average molecular weight of from about 35,000 to about 70,000 Daltons and that has a glass transition temperature of less than about 0°C.

Applicants thus submit that claim 1 is patentable over the cited references. Claims 2-53 depend directly or indirectly from claim 1 and are thus patentable for the same reasons as set forth above for claim 1 as well as for the additional elements they require.

Additionally, with regard to dependent claims 33-36 and 41-52, the Office has stated that properties such as hydrostatic pressure resistance (claims 33-36), modulus of elasticity (claims 41-43), % strain in the machine direction (claims 44-46), % strain in the cross direction (claims 47-49), and break

stress (claims 50-52) are inherent properties of the films of Hale, et al. since the films of Hale, et al. are substantially identical to the claimed films. Applicants respectfully disagree.

Initially, it should be recognized that properties such as hydrostatic pressure resistance, modulus of elasticity, % strain in the machine direction, % strain in the cross direction, and break stress are not determined solely by the mole % breakdown of aliphatic dicarboxylic acids, aromatic dicarboxylic acids, and dihydric alcohols in the copolyester. Rather, these properties are affected not only by mole% breakdown of components but also by factors such as the size and amount of filler particles in the film, the number average molecular weight of the copolyester, the weight average molecular weight of the copolyester, and the glass transition temperature of the copolyester. For instance, ¶37 of the specification states that weight average molecular weight and number average molecular weight have an effect on the tensile strength of copolyesters. In particular, if the molecular weight numbers are too small, the copolyester will be too tacky and have too low of a tensile strength. If the molecular weight numbers are too high, various processing issues are encountered. Additionally, as described in ¶39 of the specification, the glass transition temperature of the copolyester affects the flexibility characteristics of the copolyesters.

As further support for this, applicants refer to the Examples of the present invention. In particular, the examples describe the preparation of stretched aliphatic-aromatic copolyester films using two commercially available aliphatic-

aromatic copolyester resins as starting materials (i.e., Ecoflex F BX 7011 aliphatic-aromatic copolyester and EnPol G8060 M aliphatic-aromatic copolyester).¹⁸ The films prepared using the Ecoflex and EnPol resins both had mole% breakdown of components that fell within the ranges set forth in applicants claim 1. Stretched films prepared using various amounts of filler particles were then tested for hydrostatic pressure resistance (Example 4), water vapor transmission rates (Example 5), and tensile strengths (e.g., % strain in the machine direction and % strain in the cross direction) (Example 6).

As can be seen from the results of these tests, the various stretched films prepared with the Ecoflex or EnPol resins did not have the same hydrostatic pressure resistance, water vapor transmission rate, and tensile strength measurements, despite all having a mole% breakdown of components that fell within the ranges set forth in claim 1, thus illustrating that copolyesters that have a mole% breakdown of components that fall within the ranges set forth in claim 1 will not inherently have the same values for these properties. Consequently, it cannot be assumed that the films of Hale, et al. will inherently have the same hydrostatic pressure resistance, modulus of elasticity, % strain in the machine direction, % strain in the cross direction, and break stress, simply because they have similar mole % breakdown of aliphatic dicarboxylic acids, aromatic dicarboxylic acids, and dihydric alcohols, as set forth in applicants' claims.

Claims 33-36 and 41-52 are thus patentable over the cited references for this additional reason.

¹⁸ Example 1 describes preparation of precursor films, and Example 3 describes stretching the films of Example 1.

Additionally, with regard to claims 44-49, the Office has stated that Chung, et al. teach an elongation to break of 200-800%. Applicants respectfully note that Chung, et al. have not stated whether this is a measurement in the cross-direction or in the machine direction. If this is a measurement in the machine direction, the values set forth in Chung, et al. are well above the values claimed in applicants' claims 44-46. Furthermore, there is nothing in Chung, et al. to suggest that the values given therein were measured in the cross-direction. Even if the Chung, et al. values were measured in the cross-direction, it still cannot be assumed that the films of Hale, et al. will also inherently have these properties, since the films of Hale, et al. cannot be said to be substantially identical to the films of Chung, et al. for the reasons set forth above. Claims 44-49 are thus patentable for this additional reason.

Claim 54 is directed to an absorbent article comprising a laminated outer cover, the laminated outer cover comprising a biodegradable stretched aliphatic-aromatic copolyester film. The film comprises filler particles and a copolyester comprising from about 10 mole% to about 30 mole% terephthalic acid, from about 20 mole% to about 40 mole% adipic acid, from about 30 mole% to about 60 mole% 1,4-butanediol, and wherein the copolyester has a weight average molecular weight of from about 90,000 to about 160,000 Daltons and a number average molecular weight of from about 35,000 to about 70,000 Daltons, and wherein the glass transition temperature of the copolyester is less than about 0°C.

Claim 54 is patentable for the same reasons as set forth above for claim 1. Claims 55-57 depend directly or indirectly

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from claim 54 and are thus patentable for the same reasons as set forth above for claim 54 as well as for the additional elements they require.

CONCLUSION

In light of the foregoing, applicants request reconsideration of the rejection of claims 1-57 and allowance of all pending claims. The Commissioner is hereby authorized to charge any fees which may be required to Deposit Account No. 19-1345.

Respectfully submitted,

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